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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/837,937	04/19/2001	Christoph Gerard August Hoelen	NL 000211	8218

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EXAMINER

KUMAR, SRILAKSHMI K

ART UNIT PAPER NUMBER

2629

DATE MAILED: 11/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/837,937

Applicant(s)

HOELEN ET AL.

Examiner

Srilakshmi K. Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 September 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-20 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

The following office action is in response to the response filed on September 18, 2006. Claims 1-20 are pending.

#### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 8-14, 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura (US 6,008,871) in view of Steiner et al (US 5,748,828).

As to independent **claims 1, 8, and 9**, Okumura discloses an assembly comprising; a display device provided with a pattern of pixels driven by a control circuit (Fig. 1, col. 6, lines 17-19, disclosing a liquid crystal display), and an illumination system for illuminating the display device (Fig. 5a-d, col. 9, lines 58-61, backlight assembly), said illumination system comprising a light emitting panel (col. 9, lines 61-66, light guide plate) and at least one light source (col. 9, line 62, light source, col. 10, lines 5-7, LED as a light source), said light source being associated with the light emitting panel (Fig. 5a, col. 9, lines 58-63), the light emitting panel capable of providing light to the display device (col. 10, lines 3-5). Okumura does not disclose wherein the light source comprises at least three sets of light emitting diodes and wherein each set of light emitting diodes has a different light emission wavelength. Steiner et al discloses a color separating backlight, wherein the light source comprises at least three sets of light emitting diodes (col. 6, lines 62-66, RGB LEDs) and wherein each set of light emitting

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diodes has a different light emission wavelength (col. 6, lines 62-66, wherein the LEDs are of different colors, red, green and blue).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include the three sets of light emitting diodes wherein each set of light emitting diodes has a different light emission wavelength as taught by Steiner et al into Okumura. The motivation to combine Steiner et al into Okumura is by separating white light into its component colors and directing each component to the appropriate color subpixels of an LCD, a large improvement in power efficiency can be realized as is disclosed by Steiner et al in col. 4, lines 7-10.

Okumura discloses the control circuit also drives luminous fluxes of the light emitting diodes in dependence upon an image to be displayed by the display device (col. 10, lines 14-45, the control circuit changes the luminance factor).

As to independent **claims 17 and 19**, limitations of claims 1, 8 and 9, further comprising, Okumura discloses wherein the control circuit is operable to vary an intensity of light emitted by each set of the light emitting diodes in response to an illumination level of the image to be displayed by the display device (col. 10, lines 14-45, the control circuit changes the luminance).

As to dependent **claim 2**, limitations of claim 1, further comprising, Okumura discloses wherein the control circuit varies an intensity of light emitted by each set of the light emitting diodes in response to an illumination level of the image to be displayed by the display device (col. 10, lines 14-45, the control circuit changes the luminance).

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As to dependent **claim 3**, limitations of claim 1, further comprising, Okumura discloses wherein the intensity of the light emitted by each set of the light emitting diodes can be adjusted on a frame-to-frame basis (col. 10, lines 45-53, changing from emissive to non-emissive).

As to dependent **claim 4**, limitations of claim 1, further comprising, Okumura discloses wherein the intensity of the light emitted by each set of the light emitting diodes can be adjusted for each color on a frame to frame basis (col. 10, lines 45-53, changing from emissive to non-emissive).

As to dependent **claim 5**, limitations of claim 1, further comprising, Okumura does not disclose wherein the light source comprises at least four sets of light emitting diodes, wherein each set of light emitting diodes has a different light emission wavelength. Steiner et al discloses three sets of light emitting diodes in col. 6, lines 62-66, RGB LEDs where each has a different light emission wavelength (col. 6, lines 62-66). Steiner does not disclose a fourth set. Examiner takes Official Notice that having a fourth set of light emitting diodes is well known in the art. It would have been obvious to one of ordinary skill in the art to include a fourth set of light emitting diodes into the system of Okumura as modified by Steiner et al, as a fourth set of light emitting diodes would enable the backlight to include secondary colors other than the primary colors of RGB.

As to dependent **claims 10 and 11**, limitations of claims 1 and 2, further comprising, Steiner et al disclose wherein a first set of light emitting diodes has a red light emission wavelength (col. 6, lines 62-66, wherein the LEDs are of different colors, red, green and blue), a second set of light emitting diodes has a green light emission wavelength (col. 6, lines 62-66, wherein the LEDs are of different colors, red, green and blue), and a third set of light emitting

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diodes has a blue light emission wavelength (col. 6, lines 62-66, wherein the LEDs are of different colors, red, green and blue).

As to dependent **claim 12**, further comprising, Okumura discloses wherein the intensity of light emitted by each set of the light emitting diodes can be adjusted on a frame-to-frame basis (col. 10, lines 45-53, changing from emissive to non-emissive).

As to dependent **claim 13**, limitations of claim 2, further comprising, Okumura discloses wherein the intensity of light emitted by each set of the light emitting diodes can be adjusted for each color on a frame to frame basis (col. 10, lines 45-53, changing from emissive to non-emissive).

As to dependent **claim 14**, limitations of claim 5, further comprising, Steiner et al disclose wherein a first set of light emitting diodes has a red light emission wavelength (col. 6, lines 62-66, wherein the LEDs are of different colors, red, green and blue), a second set of light emitting diodes has a green light emission wavelength (col. 6, lines 62-66, wherein the LEDs are of different colors, red, green and blue), and a third set of light emitting diodes has a blue light emission wavelength (col. 6, lines 62-66, wherein the LEDs are of different colors, red, green and blue)

Okumura and Steiner et al do not disclose a fourth set of light emitting diodes has an amber light emission wavelength. Examiner takes Official Notice that using an amber light emission is well known in the art. It would have been obvious to one of ordinary skill in the art to include an amber light emission into the system of Okumura as modified by Steiner et al as an amber light emission would enable the backlight to enhance a the display image with a multitude of colors rather than only the primary colors of RGB.

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As to dependent **claims 18 and 20**, limitations of claims 17 and 19, further comprising, Okumura does not disclose wherein the light source comprises at least four sets of light emitting diodes, wherein each set of light emitting diodes has a different light emission wavelength. Steiner et al discloses three sets of light emitting diodes in col. 6, lines 62-66, RGB LEDs where each has a different light emission wavelength (col. 6, lines 62-66). Steiner does not disclose a fourth set. Examiner takes Official Notice that having a fourth set of light emitting diodes is well known in the art. It would have been obvious to one of ordinary skill in the art to include a fourth set of light emitting diodes into the system of Okumura as modified by Steiner et al, as a fourth set of light emitting diodes would enable the backlight to include secondary colors other than the primary colors of RGB.

3. Claims 6 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura in view of Steiner et al as applied to claims 1 and 2 above, and further in view of what was well known in the art, as exemplified by Epstein et al (US 5,608,550)

As to dependent **claims 6 and 15**, limitations of claims 1 and 2, further comprising, Okumura and Steiner et al disclose the use of LEDs. Examiner takes Official Notice that LEDs typically have a luminous flux of at least five lumens is well known in the art, evidence of which may be found in Epstein et al at col. 3, lines 38-40. It would have been obvious to one of ordinary skill in the art to include the feature of where the LEDs have a luminous flux of at least five lumens as evidenced by Epstein et al as the luminous flux of at least five lumens enables the LEDs to operate efficiently.

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4. Claims 7 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura in view of Steiner et al as applied to claims 1 and 2 above, and further in view of what was well known in the art, as exemplified by Uchiyama (US 6,448,663).

As to dependent **claims 7 and 16**, limitations of claims 6 and 15, further comprising, Okumura and Steiner et al disclose a display with a backlight assembly using LEDs. Examiner takes Official Notice that having each set of light emitting diodes is mounted on a printed circuit board is well known in the art, evidence of which may be found in Uchiyama in col. 7, lines 36-38. It would have been obvious to one of ordinary skill in the art to include the feature of where each set of light emitting diodes is mounted on a printed circuit board as evidenced by Uchiyama as the printed circuit board enables the assembly of the display device.

#### *Response to Arguments*

5. Applicant's arguments filed September 18, 2006 have been fully considered but they are not persuasive.

Applicant argues where the prior art of Okumura in view of Steiner fails to teach where an assembly in which a control circuit for the display device also drives luminous fluxes of the LEDs in dependence upon an image to be displayed by the display device. The examiner, respectfully, disagrees. Okumura in col. 10, lines 14-45, clearly teaches the changes of the luminous, i.e. by changing the density of the light diffusing elements variously, the luminance factor of the LEDs can be changed and depends upon corresponding contrasts.

With respect to applicant's arguments of where Epstein does not teach where LEDs operate efficiently in the range of 5-10 lumens per watt, Examiner respectfully, disagrees.

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Epstein teaches in col. 3, lines 38-40 the ideal output of an efficiently operating LED to be in the range of 5-10 lumens per watt.

As discussed above, the combination of the prior art clearly discloses the limitations set forth in the instant application, therefore, the rejection is maintained and made FINAL.

***Conclusion***

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Srilakshmi K. Kumar whose telephone number is 571 272 7769. The examiner can normally be reached on 9:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on 571 272 3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Srilakshmi K. Kumar  
Examiner  
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SKK  
November 17, 2006

A handwritten signature in black ink, appearing to read "Sumati Lefkowitz", with a stylized flourish at the end.

SUMATI LEFKOWITZ  
SUPERVISORY PATENT EXAMINER